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ning of each regular issue of the PCT Gazette.*

(54) Title: **FLUORESCENT SILICA-BASED NANOPARTICLES**

(57) Abstract: The invention generally relates to fluorescent nanoparticles and more specifically to silica-based fluorescent nanopar-
ticles of less than 30nm with covalently attached organic dyes. The invention provides a fluorescent monodisperse silica nanopar-
ticle comprising fluorophore center core and a silica shell wherein the radiative properties of the nanoparticle are dependent upon
the chemistry (composition) of the core and presence of the silica shell. In one aspect of the invention, the core-shell architecture
provides an enhancement in fluorescence quantum efficiency. The invention generally provides control of photophysical properties
of dye molecules encapsulated within silica particles with sizes down to 30 nm and below. This control is accomplished through
changes in silica chemistry and particle architecture on the nanometer size scale and results in significant brightness enhancement
compared to free dye.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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US CL : 428/403; 435/7.21; 252/301.4

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 428/403; 435/7.21; 252/301.4

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y, P	US 6,548,264 B1 (TAN et al.) 15 April 2003 (15.04.2003), entire document.	1-13
Y	US 6,479,146 B1 (CARUSO et al.) 12 November 2002 (12.11.2002), entire document.	1-13
Y	US 6,251,303 B1 (BAWENDI et al.) 26 June 2001 (26.06.2001), entire document.	1-13
Y	WO 99/50916 A (MASSACHUSETTS INSTITUTE OF TECHNOLOGY) 7 October 1999 (07.10.1999), entire document.	1-13



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